Original Research Article

A STUDY ON THE PERCEPTION OF CANCER PATIENT ABOUT THE WARNING LABELS PRINTED ON PACKET OF TOBACCO PRODUCTS

Arjun Yadav¹, Huma Khan², Abhinav Pandey³, Amit Kumar⁴, Ravi Kumar⁵

¹ P.G-3ʳᵈ year, Department of Community Medicine, SRMS IMS, Bareilly, Uttar Pradesh India.
²Associate Professor, Department of Community Medicine, ASMC, Pilibhit, Uttar Pradesh India.
³Associate Professor, Department of Community Medicine, SRMS IMS, Bareilly, Uttar Pradesh India.
⁴Senior Resident, Department of Community Medicine, VALASMC, Etah, Uttar Pradesh India.
⁵Statistician, Department of Community Medicine, SRMS IMS, Bareilly, Uttar Pradesh India.

A B S T R A C T

Background: Tobacco consumption is a leading cause of various health issues, including cancer, respiratory diseases, and cardiovascular conditions. To mitigate its effects, health organizations have implemented tobacco warning labels on product packaging in many countries. These labels aim to raise awareness about the dangers of smoking, yet their effectiveness varies across different demographics and cultural backgrounds. **Aim & Objective:** To assess the public awareness of tobacco warning labels and their effectiveness in influencing behaviour among cancer patients. **Settings and Design:** A hospital-based cross-sectional study was conducted at a cancer treatment centre in tertiary, from May 2023 to October 2024.
Methods and Materials: A sample of 400 cancer patients was surveyed using structured interviews, focusing on their awareness of tobacco warning labels.
Statistical analysis used: Statistical analysis was performed using SPSS, with the Chi-Square test to assess associations.
Results: Of the 400 patients, 37.25% noticed the warning labels on tobacco products. Of those, 67.78% understood the warnings, and 67.32% believed that the labels raised awareness about tobacco hazards. Gender, literacy, and socioeconomic status were significant factors influencing recognition of tobacco warnings. The majority, 75% of participants preferred both pictorial and descriptive warning labels.
Conclusions: Tobacco warning labels with both pictorial and descriptive content effectively raise awareness about tobacco use risks. However, their recognition and understanding are influenced by factors such as gender, literacy, and socioeconomic status. Tailoring health communication strategies to these factors can improve tobacco control efforts.
Key-words: Tobacco consumption, Warning labels, Cancer patients, Health awareness, Pictorial warnings.

INTRODUCTION

Tobacco consumption remains a significant public health concern worldwide, leading to severe health issues such as cancer, respiratory diseases, and cardiovascular conditions.[1] In order to combat its detrimental effects, governments and health organizations have put in place a number of regulatory measures, such as requiring warning labels on tobacco product packaging. In more than 120 countries, it is now mandatory for specific areas of cigarette packs to bear health warning labels that highlight the detrimental health effects of smoking.[2] These warning labels, often featuring graphic images and cautionary messages, aim to inform consumers about the dangers of tobacco use and discourage its consumption. For health warnings, this is frequently considered to be one of the most crucial and successful forms of communication.[3]

Despite these efforts, the effectiveness of such warning labels in altering consumer behaviour and perception varies across different demographics, cultural backgrounds, and levels of awareness.[4] Some individuals find these warnings impactful, prompting them to reconsider their smoking habits, while others may become desensitized or disregard them entirely.[5] However, it is also crucial to investigate the varying impacts of health warning labels because it is possible that they could have unexpected consequences, such as having no effect or reassuring consumers about use, in addition to their expected effects (i.e., raising concern about use).[6] Smokers may avoid buying tobacco products if graphic health warning labels are added to cigarette packages that are displayed on the tobacco power wall. This is because graphic health warning labels are linked to negative thoughts about smoking, and these negative thoughts are linked to lower smoking rates, greater interest in quitting, and quit attempts. Reduced cigarette purchases might result in lower cigarette consumption, which could improve public health.[7,8]

Aim & Objective(S)

To assess the public awareness of tobacco warning labels and their effectiveness in influencing behaviour among cancer patients.

MATERIALS AND METHODS

Study Area: Cancer Treatment Centre of a tertiary care hospital located in Bareilly district, North India.
Study Design: Hospital-based cross-sectional study.
Study Period: May 1, 2023 – October 31, 2024.
Study Population: All cancer patients reporting for treatment at the tertiary care hospital in Bareilly district.
Study Unit: Individual cancer patients.

Inclusion Criteria

Diagnosed cases of cancer at any stage, irrespective of the anatomical site, reporting for treatment at the study setting.

Exclusion Criteria

Patients who did not provide voluntary written informed consent.
Patients with malignancies of unknown primary origin.

Sampling Methodology

Based on data from the previous year, which indicated 3,500 cancer patients, a 10% sample size (350 patients) was calculated. Accounting for a 10% non-response rate, the final sample size was adjusted to 385 patients, rounded up to 400 for practicality.
Cancer patients were approached during their outpatient department (OPD) visits, and data were collected through structured interviews, medical record reviews, and analysis of diagnostic reports. Informed consent was obtained from all participants, ensuring they understood the study's purpose, procedures, and their rights. A pre-designed, pre-tested, semi-open-ended interview schedule was used, covering sociodemographic details, clinical profile, and financial determinants. The study received approval from the institute's ethics committee before its commencement.

Pilot Study

A pilot study involving 40 patients (10% of the sample size) was conducted to assess the feasibility of the study tools and methodology. Feedback from this phase led to refinements in the study protocol. Data from the pilot study were not included in the final analysis.

Statistical Analysis

Data were entered into MS Excel 2020 and analysed using SPSS (Trial Version). Descriptive statistics summarized qualitative variables using frequencies and percentages, and quantitative variables were analysed with appropriate measures. The Chi-Square test assessed associations between categorical variables.

RESULTS

Table 1 shows the distribution of patients based on their sociodemographic characteristics. Out of 400 patients 216(54.00%) were male and 184(46.00%) were female. Majority of patients 214(53.50%) belonged to age group 41- 60 years followed by 102(25.50%) and least 4(1%) belonged age group 0-20 years. As per their religion 293(73.25%) were Hindu followed by Muslim 89(22.25%) and Sikh 18(4.50%). Majority were married 360(90.00%) and 187(46.75%) belonged to OBC category. Patients residing in rural area 256(64.00%) while 144(36.00%) resided in urban area. Most of the patients 368(92.00%) were from joint family and 18(4.50%) were having problem family.

The majority of study participants belonged to lower middle class 218(54.50%) and 110(27.50%) belonged to lower class. (Figure 1)

The figure 2 presented the distribution of 400 patients based on their substance abuse status for smoked tobacco, smokeless tobacco, and alcohol. Among current users, 10.5% use smoked tobacco, 13.25% use smokeless tobacco, and 4.25% consume alcohol. For former users, 33.75% have used smoked tobacco, 32.25% have used smokeless tobacco, and 40.5% have consumed alcohol. The majority of patients, 55.75% for smoked tobacco, 54.5% for smokeless tobacco, and 55.25% for alcohol, have never used these substances.

A majority, 301(75%), believed that both pictorial and descriptive warning labels are the most effective. 78(20%) of participants prefer pictorial labels, while only 21(5%) favour descriptive labels. (Figure 3)

The table 2 presents the distribution of 400 study participants based on their awareness of tobacco warning labels. Among the total participants, 149 (37.25%) reported noticing warning labels on tobacco products, while 251(62.75%) did not. Of those who noticed the labels, 101 (67.78%) understood the tobacco-related warnings, and 48

(32.22%) did not. Furthermore, 68 (67.32%) of those who understood the warnings believed that the labels effectively raised awareness about the hazards of tobacco use, while 23 (22.78%) disagreed. Finally, 38(55.88%) of those who found the warnings informative reported that the labels were effective in helping them quit or reduce tobacco use, while 30 (44.12%) felt the labels were not effective in this regard.

The table 3 presents factors influencing the recognition of tobacco warning labels. It shows that males have significantly lower odds of recognizing the labels compared to females (OR = 0.086, p = 0.001). Illiterate individuals are less likely to recognize the labels than literate individuals (OR = 0.393, p = 0.001). Socioeconomically, individuals from the upper class have higher odds of recognizing the labels (OR = 3.959, p = 0.042), while middle-class individuals show no statistically significant difference (OR = 1.235, p = 0.594). There is no statistically significant influence of place of residence of study participants on recognition of tobacco warning labels.

Table 1: Distribution of patients based on their socio demographic characteristics

Sociodemographic characteristics		Frequency	Percentage
Age group	< 20 years	4	1.00%
	21-40 years	80	20.00%
	41-60 years	214	53.50%
	61-80 years	102	25.50%
Gender	Male	216	54.00%
	Female	184	46.00%
Religion	Hindu	293	73.25%
	Muslim	89	22.25%
	Sikh	18	4.50%
Marital status	Married	360	90.00%
	Unmarried	13	3.25%
	Widowed/Widower	18	4.50%
	Separated	9	2.25%
Caste Category	SC	129	32.25%
	OBC	187	46.75%
	GENERAL	84	21.00%
Place of residence	Rural	256	64.00%
	Urban	144	36.00%
Type of family	Joint	368	92.00%
	Nuclear	32	8.00%
Total		400	100.00%

Table 2: Distribution of study participants based on awareness about warning labels

Questions	Yes	No
Notice warning label on tobacco products (N=400)	149 (37.25%)	251 (62.75%)
Understand tobacco related warning (N=149)	101(67.78%)	48 (32.22%)
Warning creates awareness about hazards (N=101)	68 (67.32%)	23 (22.78%)
Warning labels effective in quitting/ reducing tobacco use (N=68)	38 (55.88%)	30 (44.12%)

Table 3: Factors Influencing Recognition of Tobacco Warning Labels

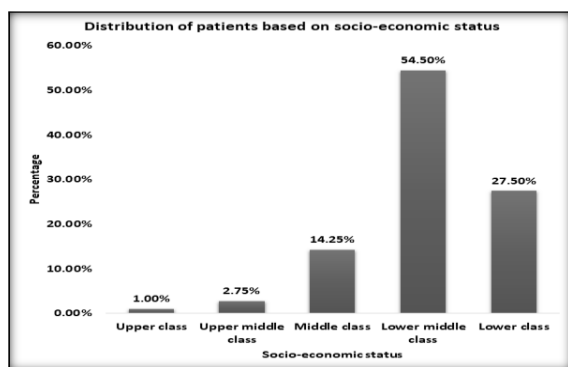| Factors	Categories	OR (S.E)	p-value
Gender	Male	0.086 (0.288)	0.001**
	Female	Reference	
Education category	Illiterate	0.393 (0.284)	0.001**
	Literate	Reference	
Place of residence	Rural	1.500 (0.248)	0.102
	Urban	Reference	
Socioeconomic Status	Upper class	3.959 (0.677)	0.042*
	Middle class	1.235 (0.396)	0.594
	Lower class	Reference	

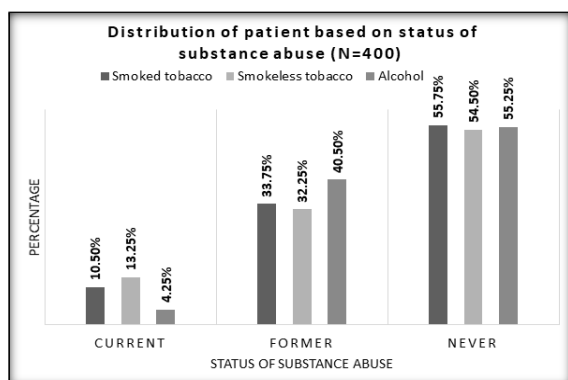**Figure 1: Distribution of patients based on socio-economic status**

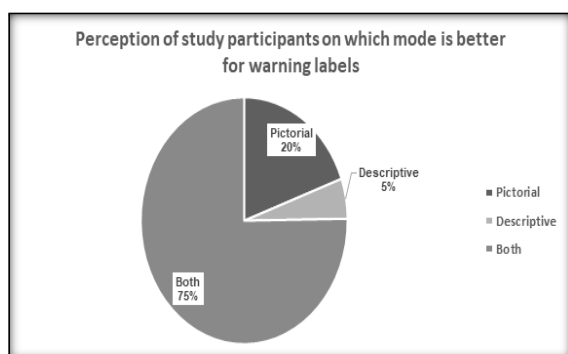**Figure 2: Distribution of patient based on status of substance abuse (N=400)**

Figure 3: Perception of study participants on which mode is better for warning labels

DISCUSSION

In the present study, 53.5% of cancer cases were in the 41–60 age group, consistent with findings by Damodar G. et al,[9] and Negi P. et al,[10] attributing the high prevalence to cumulative environmental and lifestyle risk factors. The 21–40 and 61–80 age groups accounted for 20% and 25.5%, respectively. A male predominance (54%) was observed, similar to findings of Mahajan S. et al,[11] where male were primarily linked to tobacco and alcohol use. Females (46%) commonly had breast and cervical cancers. The religious distribution showed that 73.25% of patients were Hindu, 22.25% Muslim, and 4.5% Sikh. These proportions reflect the demographic composition of the region rather than specific cancer

predispositions associated with religious groups. However, cultural and lifestyle practices unique to these communities may influence cancer risk factors, as suggested by study of Antony A. et al,[12] Most patients (90%) were married, aligning with research showing that married individuals often seek healthcare more actively. Caste-wise, 46.75% were from OBC, 32.25% from SC, and 21% from the General category.[10] Out of 400 patients 64% resided in rural areas, highlighting challenges in accessing timely cancer care, consistent with findings by Negi P. et al.[10] Rural populations often face delays due to inadequate infrastructure, limited awareness, and economic barriers. Socioeconomically, 54.5% of patients were from the lower middle class, 27.5% from the lower class, and 1% from the upper class. Contrasting findings from urban-centric studies like Antony A. et al,[12] report a higher representation of middle- and upper-class patients, likely due to better healthcare availability in urban settings.

The current study shows that among the patients, 10.5% were current smokers, 33.8% were former smokers, and 55.8% reported never having smoked tobacco. These findings are consistent with well-documented associations between tobacco smoking and cancer, particularly cancers of the lung, oral cavity, larynx, and oesophagus. Studies like Mahajan S. et al,[11] have similarly highlighted the high prevalence of smoking-related cancers, noting that former smokers often dominate cancer patient populations due to the cumulative and long-lasting effects of smoking on cancer risk. The proportion of former smokers (33.8%) in this study reflects the long latency period between smoking exposure and cancer development. This is in line with findings by Negi P. et al,[10] which emphasize that the risk of cancer remains elevated even years after smoking cessation, underscoring the importance of early intervention.

The study results indicating that 75% of participants prefer both pictorial and descriptive tobacco warning labels align with previous research on the effectiveness of tobacco warnings. Studies in the European Union found that pictorial warnings are significantly more impactful than text-only warnings.[13] Similarly, research in Lao PDR highlighted a preference for graphic labels due to their emotional impact and better communication of health risks.[3] Combining text with visuals enhances effectiveness, as seen in Lebanon and other regions, where larger, pictorial warnings increase awareness and perceived risk.[14]

The present study reveals that only 37.25% of patients had noticed warning labels on tobacco products, while a majority (62.75%) had not. This finding highlights the limited effectiveness of warning labels in raising awareness among tobacco users, particularly in populations with lower literacy levels or limited access to health education. Studies like Antony A. et al,[12] similarly observed that despite mandatory warning labels, awareness among users remains low, especially in rural and semi-urban areas, where literacy and health awareness are often

limited. The 37.25% of patients who noticed warning labels suggest that such measures can be impactful for certain segments of the population, especially when accompanied by graphic or pictorial warnings. Research by Negi P. et al,[10] highlighted that pictorial warnings tend to be more effective in deterring tobacco use compared to textual warnings alone, as they transcend literacy barriers and leave a stronger psychological impression. However, the contrasting high proportion of patients (62.75%) unaware of warning labels underscores the need for enhancing the visibility, design, and placement of warnings. Mahajan S. et al,[11] reported similar challenges, noting that in populations with a high prevalence of tobacco use, warning labels are often ignored or not understood due to desensitization, lack of awareness, or active disregard by users.

Gender, literacy, and socioeconomic status significantly influence the recognition of tobacco warning labels. Males had lower recognition odds compared to females, which is consistent with research by Cantrell et al,[15] which found gender differences in responses to tobacco warning labels. Additionally, illiterate individuals were less likely to recognize the labels, aligning with findings from Hammond al,[4] who showed that literacy plays a crucial role in understanding textual warnings, with illiterate individuals relying more on pictorial labels. Socioeconomic factors also played a significant role, with individuals from the upper class showing higher recognition odds, similar to Shang et al,[16] who found that education and socioeconomic status influence the effectiveness of tobacco warning labels. Interestingly, the study found no significant effect of place of residence on label recognition, which contrasts with Edwards et al,[17] who suggested that regional factors might affect responses to tobacco warnings. These findings emphasize the need for tailored warning labels that account for demographic and socioeconomic diversity to improve public health messaging.

CONCLUSION

This study highlights significant demographic and socioeconomic factors influencing cancer prevalence and healthcare access, particularly in rural populations. The findings on tobacco use and the effectiveness of warning labels emphasize the need for more impactful and accessible health interventions. Socioeconomic status, gender, and literacy levels were found to affect tobacco warning label recognition, underscoring the importance of targeted public health strategies. Despite the limitations of tobacco warnings, pictorial labels proved more effective in raising awareness. These results suggest a need for enhanced healthcare infrastructure and tailored health communications to address the diverse needs of at-risk populations.

Recommendation
Public health campaigns should be tailored to demographic variations, enhance tobacco warning labels for better recognition, improve healthcare access in underserved areas, and promote community-driven tobacco control efforts.

Limitation of the study
The study's limitations include potential sample bias as only cancer patients were enquired, which may affect the generalizability of the findings.

Relevance of the study
The findings are important for informing public health strategies and policies aimed at reducing tobacco-related harm, especially in rural and marginalized populations.

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